

SEQUENCE LISTING

<110> ASHTON-RICKARDT, PHILIP

<120> METHODS AND COMPOSITIONS FOR THE INHIBITION OF
CATHEPSINS

<130> ARCD:390US

<140> UNKNOWN

<141> 2004-02-19

<150> 60/448,285

<151> 2003-02-19

<160> 25

<170> PatentIn Ver. 2.1

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<211> 1323

<212> DNA

<213> Homo sapiens

<400> 1

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<212> PRT

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Tyr Arg Lys Leu Val Leu Lys Asn Pro Asp Glu Asn Val Val Phe Ser	50	55	60
Pro Phe Ser Ile Cys Thr Ala Leu Ala Leu Leu Ser Leu Gly Ala Lys	65	70	75
Ser Asn Thr Leu Lys Glu Ile Leu Glu Gly Leu Lys Phe Asn Leu Thr	85	90	95
Glu Thr Pro Glu Pro Asp Ile His Gln Gly Phe Arg Tyr Leu Leu Asp	100	105	110
Leu Leu Ser Gln Pro Gly Asn Gln Val Gln Ile Ser Thr Gly Ser Ala	115	120	125
Leu Phe Ile Glu Lys His Leu Gln Ile Leu Ala Glu Phe Lys Glu Lys	130	135	140
Ala Arg Ala Leu Tyr Gln Ala Glu Ala Phe Thr Ala Asp Phe Gln Gln	145	150	155
Pro Leu Lys Ala Thr Lys Leu Ile Asn Asp Tyr Val Ser Asn His Thr	165	170	175
Gln Gly Lys Ile Lys Glu Leu Ile Ser Gly Leu Lys Glu Ser Thr Leu	180	185	190
Met Val Leu Val Asn Tyr Ile Tyr Phe Lys Gly Lys Trp Lys Asn Pro	195	200	205
Phe Asp Pro Asn Asp Thr Phe Lys Ser Glu Phe Tyr Leu Asp Glu Lys	210	215	220
Arg Ser Val Ile Val Ser Met Met Lys Thr Gly Tyr Leu Thr Thr Pro	225	230	235
Tyr Phe Arg Asp Glu Glu Leu Ser Cys Thr Val Val Glu Leu Lys Tyr	245	250	255
Thr Gly Asn Ala Ser Ala Met Phe Ile Leu Pro Asp Gln Gly Arg Met	260	265	270
Gln Gln Val Glu Ala Ser Leu Gln Pro Glu Thr Leu Arg Lys Trp Lys	275	280	285
Asn Ser Leu Lys Pro Arg Met Ile His Glu Leu Arg Leu Pro Lys Phe	290	295	300
Ser Ile Ser Thr Asp Tyr Ser Leu Glu His Ile Leu Pro Glu Leu Gly			

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Ile Arg Glu Val Phe Ser Thr His Ala Asp Leu Ser Ala Ile Thr Gly						
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Thr Lys Asp Leu Arg Val Ser Gln Val Val His Lys Ala Val Leu Asp						
	340		345			350
Val Ala Glu Lys Gly Thr Glu Ala Ala Ala Thr Gly Met Ala Gly						
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Val Gly Cys Cys Ala Val Phe Asp Phe Leu Glu Ile Phe Phe Asn Arg						
	370		375			380
Pro Phe Leu Met Ile Ile Ser Asp Thr Lys Ala His Ile Ala Leu Phe						
	385		390			400
Met Ala Lys Val Thr Asn Pro Glu Arg Ser Thr Asn Phe Pro Asn Gly						
	405			410		415
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Asp Pro Leu Cys Leu Ile Gly Gln						
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Phe Ser Ile Ser Ser Ala Met Ala Met Val Phe Leu Gly Thr Arg Gly
35 40 45
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50 55 60
Glu Val His Ser Arg Phe Gln Ser Leu Asn Ala Asp Ile Asn Lys Arg
65 70 75 80
Gly Ala Ser Tyr Ile Leu Lys Leu Ala Asn Arg Leu Tyr Gly Glu Lys
85 90 95
Thr Tyr Asn Phe Leu Pro Glu Phe Leu Val Ser Thr Gln Lys Thr Tyr
100 105 110
Gly Ala Asp Leu Ala Ser Val Asp Phe Gln His Ala Ser Glu Asp Ala
115 120 125

Arg Lys Thr Ile Asn Gln Trp Val Lys Gly Gln Thr Glu Gly Lys Ile
 130 135 140
 Pro Glu Leu Leu Ala Ser Gly Met Val Asp Asn Met Thr Lys Leu Val
 145 150 155 160
 Leu Val Asn Ala Ile Tyr Phe Lys Gly Asn Trp Lys Asp Lys Phe Met
 165 170 175
 Lys Glu Ala Thr Thr Asn Ala Pro Phe Arg Leu Asn Lys Lys Asp Arg
 180 185 190
 Lys Thr Val Lys Met Met Tyr Gln Lys Lys Lys Phe Ala Tyr Gly Tyr
 195 200 205
 Ile Glu Asp Leu Lys Cys Arg Val Leu Glu Leu Pro Tyr Gln Gly Glu
 210 215 220
 Glu Leu Ser Met Val Ile Leu Leu Pro Asp Asp Ile Glu Asp Glu Ser
 225 230 235 240
 Thr Gly Leu Lys Lys Ile Glu Glu Gln Leu Thr Leu Glu Lys Leu His
 245 250 255
 Glu Trp Thr Lys Pro Glu Asn Leu Asp Phe Ile Glu Val Asn Val Ser
 260 265 270
 Leu Pro Arg Phe Lys Leu Glu Glu Ser Tyr Thr Leu Asn Ser Asp Leu
 275 280 285
 Ala Arg Leu Gly Val Gln Asp Leu Phe Asn Ser Ser Lys Ala Asp Leu
 290 295 300
 Ser Gly Met Ser Gly Ala Arg Asp Ile Phe Ile Ser Lys Ile Val His
 305 310 315 320
 Lys Ser Phe Val Glu Val Asn Glu Glu Gly Thr Glu Ala Ala Ala Ala
 325 330 335
 Thr Ala Gly Ile Ala Thr Phe Cys Met Leu Met Pro Glu Glu Asn Phe
 340 345 350
 Thr Ala Asp His Pro Phe Leu Phe Phe Ile Arg His Asn Ser Ser Gly
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 Ser Ile Leu Phe Leu Gly Arg Phe Ser Ser Pro
 370 375

<210> 4

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<212> PRT

<213> Homo sapiens

<400> 4

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 20 25 30
 Trp Ser Ile Ser Ser Thr Met Ala Met Val Tyr Met Gly Ser Arg Gly
 35 40 45
 Ser Thr Glu Asp Gln Met Ala Lys Val Leu Gln Phe Asn Glu Val Gly
 50 55 60
 Ala Asn Ala Val Thr Pro Met Thr Pro Glu Asn Phe Thr Ser Cys Gly
 65 70 75 80
 Phe Met Gln Gln Ile Gln Lys Gly Ser Tyr Pro Asp Ala Ile Leu Gln
 85 90 95
 Ala Gln Ala Ala Asp Lys Ile His Ser Ser Phe Arg Ser Leu Ser Ser
 100 105 110
 Ala Ile Asn Ala Ser Thr Gly Asn Tyr Leu Leu Glu Ser Val Asn Lys
 115 120 125
 Leu Phe Gly Glu Lys Ser Ala Ser Phe Arg Glu Glu Tyr Ile Arg Leu
 130 135 140
 Cys Gln Lys Tyr Tyr Ser Ser Glu Pro Gln Ala Val Asp Phe Leu Glu
 145 150 155 160
 Cys Ala Glu Glu Ala Arg Lys Lys Ile Asn Ser Trp Val Lys Thr Gln
 165 170 175
 Thr Lys Gly Lys Ile Pro Asn Leu Leu Pro Glu Gly Ser Val Asp Gly
 180 185 190
 Asp Thr Arg Met Val Leu Val Asn Ala Val Tyr Phe Lys Gly Lys Trp
 195 200 205
 Lys Thr Pro Phe Glu Lys Lys Leu Asn Gly Leu Tyr Pro Phe Arg Val
 210 215 220
 Asn Ser Ala Gln Arg Thr Pro Val Gln Met Met Tyr Leu Arg Glu Lys
 225 230 235 240
 Leu Asn Ile Gly Tyr Ile Glu Asp Leu Lys Ala Gln Ile Leu Glu Leu
 245 250 255
 Pro Tyr Ala Gly Asp Val Ser Met Phe Leu Leu Leu Pro Asp Glu Ile
 260 265 270
 Ala Asp Val Ser Thr Gly Leu Glu Leu Leu Glu Ser Glu Ile Thr Tyr
 275 280 285
 Asp Lys Leu Asn Lys Trp Thr Ser Lys Asp Lys Met Ala Glu Asp Glu
 290 295 300
 Val Glu Val Tyr Ile Pro Gln Phe Lys Leu Glu Glu His Tyr Glu Leu
 305 310 315 320

Arg Ser Ile Leu Arg Ser Met Gly Met Glu Asp Ala Phe Asn Lys Gly
325 330 335

Arg Ala Asn Phe Ser Gly Met Ser Glu Arg Asn Asp Leu Phe Leu Ser
340 345 350

Glu Val Phe His Gln Ala Met Val Asp Val Asn Glu Glu Gly Thr Glu
355 360 365

Ala Ala Ala Gly Thr Gly Gly Val Met Thr Gly Arg Thr Gly His Gly
370 375 380

Gly Pro Gln Phe Val Ala Asp His Pro Phe Leu Phe Leu Ile Met His
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Lys Ile Thr Asn Cys Ile Leu Phe Phe Gly Arg Phe Ser Ser Pro
405 410 415

<210> 5
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<213> Homo sapiens

<400> 5
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Ser Ile Thr Ser Ala Leu Gly Met Val Leu Leu Gly Ala Lys Asp Asn
35 40 45

Thr Ala Gln Gln Ile Lys Lys Val Leu His Phe Asp Gln Val Thr Glu
50 55 60

Asn Thr Thr Gly Lys Ala Ala Thr Tyr His Val Asp Arg Ser Gly Asn
65 70 75 80

Val His His Gln Phe Gln Lys Leu Leu Thr Glu Phe Asn Lys Ser Thr
85 90 95

Asp Ala Tyr Glu Leu Lys Ile Ala Asn Lys Leu Phe Gly Glu Lys Thr
100 105 110

Tyr Leu Phe Leu Gln Glu Tyr Leu Asp Ala Ile Lys Lys Phe Tyr Gln
115 120 125

Thr Ser Val Glu Ser Val Asp Phe Ala Asn Ala Pro Glu Glu Ser Arg
130 135 140

Lys Lys Ile Asn Ser Trp Val Glu Ser Gln Thr Asn Glu Lys Ile Lys
145 150 155 160

Asn Leu Ile Pro Glu Gly Asn Ile Gly Ser Asn Thr Thr Leu Val Leu

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Glu	Asp	Thr	Lys	Glu	Glu	Lys	Phe	Trp	Pro	Asn	Lys	Asn	Thr	Tyr	Lys	
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Ser	Ile	Gln	Met	Met	Arg	Gln	Tyr	Thr	Ser	Phe	His	Phe	Ala	Ser	Leu	
	210					215					220					
Glu	Asp	Val	Gln	Ala	Lys	Val	Leu	Glu	Ile	Pro	Tyr	Lys	Gly	Lys	Asp	
225					230					235					240	
Leu	Ser	Met	Ile	Val	Leu	Leu	Pro	Asn	Glu	Ile	Asp	Gly	Leu	Gln	Lys	
				245					250					255		
Leu	Glu	Glu	Lys	Leu	Thr	Ala	Glu	Lys	Leu	Met	Glu	Trp	Thr	Ser	Leu	
			260					265					270			
Gln	Asn	Met	Arg	Glu	Thr	Arg	Val	Asp	Leu	His	Leu	Pro	Arg	Phe	Lys	
		275					280					285				
Val	Glu	Glu	Ser	Tyr	Asp	Leu	Lys	Asp	Thr	Leu	Arg	Thr	Met	Gly	Met	
	290					295					300					
Val	Asp	Ile	Phe	Asn	Gly	Asp	Ala	Asp	Leu	Ser	Gly	Met	Thr	Gly	Ser	
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<210> 6

<211> 390

<212> PRT

<213> Homo sapiens

<400> 6

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Gln	Gln	Phe	Arg	Lys	Ser	Lys	Glu	Asn	Asn	Ile	Phe	Tyr	Ser	Pro	Ile
			20					25					30		

Ser Ile Thr Ser Ala Leu Gly Met Val Leu Leu Gly Ala Lys Asp Asn
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 Thr Ala Gln Gln Ile Ser Lys Val Leu His Phe Asp Gln Val Thr Glu
 50 55 60
 Asn Thr Thr Glu Lys Ala Ala Thr Tyr His Val Asp Arg Ser Gly Asn
 65 70 75 80
 Val His His Gln Phe Gln Lys Leu Leu Thr Glu Phe Asn Lys Ser Thr
 85 90 95
 Asp Ala Tyr Glu Leu Lys Ile Ala Asn Lys Leu Phe Gly Glu Lys Thr
 100 105 110
 Tyr Gln Phe Leu Gln Glu Tyr Leu Asp Ala Ile Lys Lys Phe Tyr Gln
 115 120 125
 Thr Ser Val Glu Ser Thr Asp Phe Ala Asn Ala Pro Glu Glu Ser Arg
 130 135 140
 Lys Lys Ile Asn Ser Trp Val Glu Ser Gln Thr Asn Glu Lys Ile Lys
 145 150 155 160
 Asn Leu Phe Pro Asp Gly Thr Ile Gly Asn Asp Thr Thr Leu Val Leu
 165 170 175
 Val Asn Ala Ile Tyr Phe Lys Gly Gln Trp Glu Asn Lys Phe Lys Lys
 180 185 190
 Glu Asn Thr Lys Glu Glu Lys Phe Trp Pro Asn Lys Asn Thr Tyr Lys
 195 200 205
 Ser Val Gln Met Met Arg Gln Tyr Asn Ser Phe Asn Phe Ala Leu Leu
 210 215 220
 Glu Asp Val Gln Ala Lys Val Leu Glu Ile Pro Tyr Lys Gly Lys Asp
 225 230 235 240
 Leu Ser Met Ile Val Leu Leu Pro Asn Glu Ile Asp Gly Leu Gln Lys
 245 250 255
 Leu Glu Glu Lys Leu Thr Ala Glu Lys Leu Met Glu Trp Thr Ser Leu
 260 265 270
 Gln Asn Met Arg Glu Thr Cys Val Asp Leu His Leu Pro Arg Phe Lys
 275 280 285
 Met Glu Glu Ser Tyr Asp Leu Lys Asp Thr Leu Arg Thr Met Gly Met
 290 295 300
 Val Asn Ile Phe Asn Gly Asp Ala Asp Leu Ser Gly Met Thr Trp Ser
 305 310 315 320
 His Gly Leu Ser Val Ser Lys Val Leu His Lys Ala Phe Val Glu Val
 325 330 335

Thr Glu Glu Gly Val Glu Ala Ala Ala Ala Thr Ala Val Val Val Val
 340 345 350
 Glu Leu Ser Ser Pro Ser Thr Asn Glu Glu Phe Cys Cys Asn His Pro
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 Phe Leu Phe Phe Ile Arg Gln Asn Lys Thr Asn Ser Ile Leu Phe Tyr
 370 375 380
 Gly Arg Phe Ser Ser Pro
 385 390

<210> 7
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 <213> Homo sapiens

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 Ser Met Ser Cys Ala Leu Ala Met Val Tyr Met Gly Ala Lys Gly Asn
 35 40 45
 Thr Ala Ala Gln Met Ala Gln Ile Leu Ser Phe Asn Lys Ser Gly Gly
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 Gly Gly Asp Ile His Gln Gly Phe Gln Ser Leu Leu Thr Glu Val Asn
 65 70 75 80
 Lys Thr Gly Thr Gln Tyr Leu Leu Arg Val Ala Asn Arg Leu Phe Gly
 85 90 95
 Glu Lys Ser Cys Asp Phe Leu Ser Ser Phe Arg Asp Ser Cys Gln Lys
 100 105 110
 Phe Tyr Gln Ala Glu Met Glu Glu Leu Asp Phe Ile Ser Ala Val Glu
 115 120 125
 Lys Ser Arg Lys His Ile Asn Thr Trp Val Ala Glu Lys Thr Glu Gly
 130 135 140
 Lys Ile Ala Glu Leu Leu Ser Pro Gly Ser Val Asp Pro Leu Thr Arg
 145 150 155 160
 Leu Val Leu Val Asn Ala Val Tyr Phe Arg Gly Asn Trp Asp Gly Gln
 165 170 175
 Phe Asp Lys Glu Asn Thr Glu Glu Arg Leu Phe Lys Val Ser Lys Asn
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 Glu Glu Lys Pro Val Gln Met Met Phe Lys Gln Ser Thr Phe Lys Lys
 195 200 205

Thr Tyr Ile Gly Glu Ile Phe Thr Gln Ile Leu Val Leu Pro Tyr Val
 210 215 220
 Gly Lys Glu Leu Asn Met Ile Ile Met Leu Pro Asp Glu Thr Thr Asp
 225 230 235 240
 Leu Arg Thr Val Glu Lys Glu Leu Thr Tyr Glu Lys Phe Val Glu Trp
 245 250 255
 Thr Arg Leu Asp Met Met Asp Glu Glu Glu Val Glu Val Ser Leu Pro
 260 265 270
 Arg Phe Lys Leu Glu Glu Ser Tyr Asp Met Glu Ser Val Leu Arg Asn
 275 280 285
 Leu Gly Met Thr Asp Ala Phe Glu Leu Gly Lys Ala Asp Phe Ser Gly
 290 295 300
 Met Ser Gln Thr Asp Leu Ser Leu Ser Lys Val Val His Lys Ser Phe
 305 310 315 320
 Val Glu Val Asn Glu Glu Gly Thr Glu Ala Ala Ala Ala Thr Ala Ala
 325 330 335
 Ile Met Met Met Arg Cys Ala Arg Phe Val Pro Arg Phe Cys Ala Asp
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 Phe Cys Gly Arg Phe Ser Ser Pro
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<210> 8
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 <212> PRT
 <213> Homo sapiens

<400> 8
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 35 40 45
 Ser Thr Ala Ala Gln Met Ser Gln Ala Leu Cys Leu Tyr Lys Asp Gly
 50 55 60
 Asp Ile His Arg Gly Phe Gln Ser Leu Leu Ser Glu Val Asn Arg Thr
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 Gly Thr Gln Tyr Leu Leu Arg Thr Ala Asn Arg Leu Phe Gly Glu Lys

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Gln	Ala	Glu	Leu	Glu	Glu	Leu	Ser	Phe	Ala	Glu	Asp	Thr	Glu	Glu	Cys				
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Arg	Lys	His	Ile	Asn	Asp	Trp	Val	Ala	Glu	Lys	Thr	Glu	Gly	Lys	Ile				
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Ser	Glu	Val	Leu	Asp	Ala	Gly	Thr	Val	Asp	Pro	Leu	Thr	Lys	Leu	Val				
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Leu	Val	Asn	Ala	Ile	Tyr	Phe	Lys	Gly	Lys	Trp	Asn	Glu	Gln	Phe	Asp				
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Arg	Lys	Tyr	Thr	Arg	Gly	Met	Leu	Phe	Lys	Thr	Asn	Glu	Glu	Lys	Lys				
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Thr	Val	Gln	Met	Met	Phe	Lys	Glu	Ala	Lys	Phe	Lys	Met	Gly	Tyr	Ala				
		195					200					205							
Asp	Glu	Val	His	Thr	Gln	Val	Leu	Glu	Leu	Pro	Tyr	Val	Glu	Glu	Glu				
	210					215					220								
Leu	Ser	Met	Val	Ile	Leu	Leu	Pro	Asp	Asp	Asn	Thr	Asp	Leu	Ala	Val				
225					230					235					240				
Val	Glu	Lys	Ala	Leu	Thr	Tyr	Glu	Lys	Phe	Lys	Ala	Trp	Thr	Asn	Ser				
				245					250					255					
Glu	Lys	Leu	Thr	Lys	Ser	Lys	Val	Gln	Val	Phe	Leu	Pro	Arg	Leu	Lys				
			260					265					270						
Leu	Glu	Glu	Ser	Tyr	Asp	Leu	Glu	Pro	Phe	Leu	Arg	Arg	Leu	Gly	Met				
		275					280					285							
Ile	Asp	Ala	Phe	Asp	Glu	Ala	Lys	Ala	Asp	Phe	Ser	Gly	Met	Ser	Thr				
	290					295					300								
Glu	Lys	Asn	Val	Pro	Leu	Ser	Lys	Val	Ala	His	Lys	Cys	Phe	Val	Glu				
305					310					315					320				
Val	Asn	Glu	Glu	Gly	Thr	Glu	Ala	Ala	Ala	Ala	Thr	Ala	Val	Val	Arg				
				325				330						335					
Asn	Ser	Arg	Cys	Ser	Arg	Met	Glu	Pro	Arg	Phe	Cys	Ala	Asp	His	Pro				
			340					345					350						
Phe	Leu	Phe	Phe	Ile	Arg	Arg	His	Lys	Thr	Asn	Cys	Ile	Leu	Phe	Cys				
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Gly	Arg	Phe	Ser	Ser	Pro														
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<210> 9
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 <212> PRT
 <213> Homo sapiens

<400> 9

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Met Glu Thr Leu Ser Asn Ala Ser Gly Thr Phe Ala Ile Arg Leu Leu
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Lys Ile Leu Cys Gln Asp Asn Pro Ser His Asn Val Phe Cys Ser Pro
          20             25             30

Val Ser Ile Ser Ser Ala Leu Ala Met Val Leu Leu Gly Ala Lys Gly
      35             40             45

Asn Thr Ala Thr Gln Met Ala Gln Ala Leu Ser Leu Asn Thr Glu Glu
      50             55             60

Asp Ile His Arg Ala Phe Gln Ser Leu Leu Thr Glu Val Asn Lys Ala
      65             70             75             80

Gly Thr Gln Tyr Leu Leu Arg Thr Ala Asn Arg Leu Phe Gly Glu Lys
          85             90             95

Thr Cys Gln Phe Leu Ser Thr Phe Lys Glu Ser Cys Leu Gln Phe Tyr
          100             105             110

His Ala Glu Leu Lys Glu Leu Ser Phe Ile Arg Ala Ala Glu Glu Ser
      115             120             125

Arg Lys His Ile Asn Thr Trp Val Ser Lys Lys Thr Glu Gly Lys Ile
      130             135             140

Glu Glu Leu Leu Pro Gly Ser Ser Ile Asp Ala Glu Thr Arg Leu Val
      145             150             155             160

Leu Val Asn Ala Ile Tyr Phe Lys Gly Lys Trp Asn Glu Pro Phe Asp
          165             170             175

Glu Thr Tyr Thr Arg Glu Met Pro Phe Lys Ile Asn Gln Glu Glu Gln
      180             185             190

Arg Pro Val Gln Met Met Tyr Gln Glu Ala Thr Phe Lys Leu Ala His
      195             200             205

Val Gly Glu Val Arg Ala Gln Leu Leu Glu Leu Pro Tyr Ala Arg Lys
      210             215             220

Glu Leu Ser Leu Leu Val Leu Leu Pro Asp Asp Gly Val Glu Leu Ser
      225             230             235             240

Thr Val Glu Lys Ser Leu Thr Phe Glu Lys Leu Thr Ala Trp Thr Lys
          245             250             255

Pro Asp Cys Met Lys Ser Thr Glu Val Glu Val Leu Leu Pro Lys Phe
          260             265             270

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Lys Leu Gln Glu Asp Tyr Asp Met Glu Ser Val Leu Arg His Leu Gly
 275 280 285
 Ile Val Asp Ala Phe Gln Gln Gly Lys Ala Asp Leu Ser Ala Met Ser
 290 295 300
 Ala Glu Arg Asp Leu Cys Leu Ser Lys Phe Val His Lys Ser Phe Val
 305 310 315 320
 Glu Val Asn Glu Glu Gly Thr Glu Ala Ala Ala Ala Ser Ser Cys Phe
 325 330 335
 Val Val Ala Glu Cys Cys Met Glu Ser Gly Pro Arg Phe Cys Ala Asp
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 His Pro Phe Leu Phe Phe Ile Arg His Asn Arg Ala Asn Ser Ile Leu
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 Phe Cys Gly Arg Phe Ser Ser Pro
 370 375

<210> 10

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

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Met Ala Gly Val Gly Cys Cys Ala
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<210> 11

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 11

Phe Val Val Ala Glu Cys Cys Met
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<210> 12

<211> 22

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic

Peptide

<400> 12
aaccagagac cctgaggaag tg 22

<210> 13
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<210> 14
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<223> Description of Artificial Sequence: Synthetic
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<210> 15
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<212> DNA
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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 15
ccatcaaacc attccttctg tagc 24

<210> 16
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 16
agcagagatt acaggacatt gcg 23

<210> 17
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic Peptide

 <400> 17
 caggagagcg tgcctacccc atctg 25

 <210> 18
 <211> 32
 <212> DNA
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 <220>
 <223> Description of Artificial Sequence: Synthetic Peptide

 <400> 18
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 <210> 19
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 <220>
 <223> Description of Artificial Sequence: Synthetic Peptide

 <400> 19
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 <210> 20
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 <220>
 <223> Description of Artificial Sequence: Synthetic Peptide

 <400> 20
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 <210> 21
 <211> 18
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 <213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 21

Asn Pro Glu Arg Ser Thr Asn Phe Pro Asn Gly Glu Gly Ala Ser Ser
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Gln Arg

<210> 22

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 22

Ser Leu Gln Pro Glu Thr Leu Arg Lys Trp Lys Asn Ser Leu Lys Pro
1 5 10 15

Arg

<210> 23

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 23

Phe Gln Pro Gln Asn Gly Gln Phe Ile
1 5

<210> 24

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Peptide

<400> 24

Lys Ala Val Tyr Asn Phe Ala Thr Met
1 5

<210> 25
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 <213> Artificial Sequence

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 <223> Description of Artificial Sequence: Synthetic
 Peptide

 <400> 25
 Ser Gly Val Glu Asn Pro Gly Gly Tyr Cys Leu
 1 5 10